

**METHOD AND APPARATUS FOR CONTROLLING FLUID FLOW RATE
IN A MICROFLUIDIC CIRCUIT**

ABSTRACT OF THE INVENTION

A method and apparatus are disclosed for controlling a flow rate of a fluid sample having an unknown or variable viscosity. The fluid sample is provided as a first fluid flow to a microfluidic channel. A second fluid is provided to the channel as a sheath around the first fluid. In one embodiment, the second fluid is injected between the first fluid flow and an internal surface of the channel. In another embodiment, the second fluid completely circumscribes the first fluid as a parallel or sheath flow. The second fluid has a known viscosity selected for achieving a flow rate. The first fluid flows at the same rate as the achieved flow rate of the second fluid.

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